

NOTES ON NESTS AND PREY OF TWO SPECIES OF GROUND-NESTING EUMENIDAE FROM SO. AMERICA (HYMENOPTERA) ¹

By Howard E. Evans, Robert W. Matthews²

ABSTRACT: Descriptions are provided of the nests and prey of *Stenodynerus otomitus* Saussure, studied in Colombia, and *Ancistrocerus clarazianus* Saussure, studied in Argentina. A description of the mature larva of *S. otomitus* is also included.

DESCRIPTORS: Hymenoptera; Eumenidae; *Stenodynerus*; *Ancistrocerus*; nests.

The following notes may be of some interest as confirming behavioral consistencies in wasps of the Eumenidae as a group, and at the same time confirming inconsistencies in behavior among species of the genera involved. Both *Stenodynerus* and *Ancistrocerus* include ground-nesters, twig-nesters, and makers of free mud cells, the inhabitants of different substrates behaving similarly regardless of generic assignments. Similar remarks might be extended to other genera of Eumenidae, suggesting that in this family one finds little of the close concordance of behavior and structure that occurs in the Sphecidae (Nielsen, 1932; Evans, 1956).

Stenodynerus otomitus Saussure

We found this species nesting in small numbers in eroded hillsides just west of the city of Cali, Colombia, in January, 1972. Nests were in bare, firm clay soil and were widely spaced (at least a meter apart) and intermingled with those of *Trachypus petiolatus* (Spinola), *Bicyrtes discisa* (Taschenberg), and species of halictid bees. Five nests of *S. otomitus* were

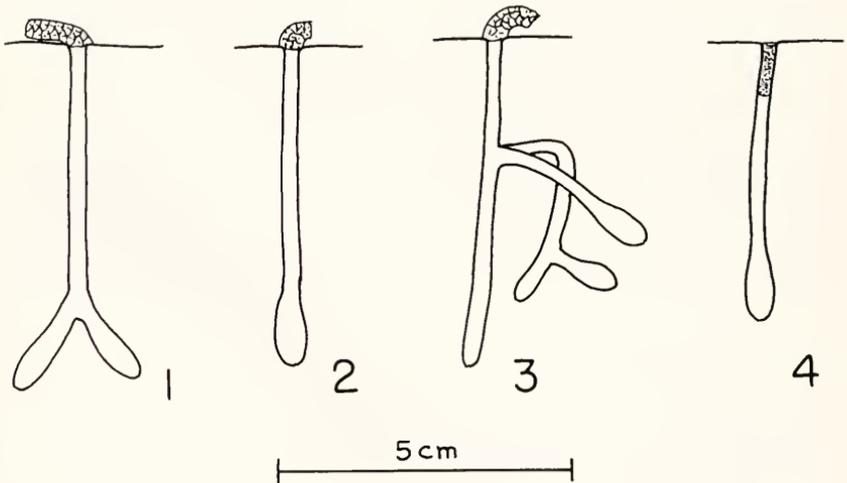
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marked at one site and later excavated (EC2, 21, 32, 37; MC1). Another nest was found about 5 km away, again in an eroded hillside but in a hard-packed gravel road (MC3); here the major associate was *Rubrica surinamensis* (DeGeer).

Each of the six nests was surmounted by a small turret consisting of ringlets of mud. These turrets measured 5-6 mm in outside diameter, 4-4.5 mm in inside diameter; four of them measured 10-11 mm in length, but two were only about 5 mm long, i.e., no longer than their diameter. All were curved to a horizontal position, the opening facing down-slope in the two nests that were on a slope. One turret that was accidentally knocked off on 9 January had not been replaced on 16 January, although the female was still in the nest. Possibly these turrets play a role in preventing rain from washing into the vertical burrows.

The six nests were all of much the same depth, 4-7 cm, all but two approximately 6 cm in depth. In three cases the vertical burrow was unbranched (Fig. 2), in two there was a fork in the burrow either near the bottom or about halfway down (Fig. 1), and in one there were three branches arising part way down, one of them bifurcate apically, so that there were 4 termini in all (Fig. 3). Generally each branch terminated in a cell, although one unbranched burrow appeared to terminate in two cells in series, separated by a small earthen barrier. Burrow diameter was 3-4 mm; cells measured 5 x 12 mm.



Figs. 1-4. Nests of South American Eumenidae. Fig. 1. *Stenodynerus otomitus* Saussure, no. EC2. Fig. 2. *S. otomitus*, no. EC37. Fig. 3. *S. otomitus*, no. MC3. Fig. 4. *Ancistrocerus clarazianus* Saussure, no. EC59.

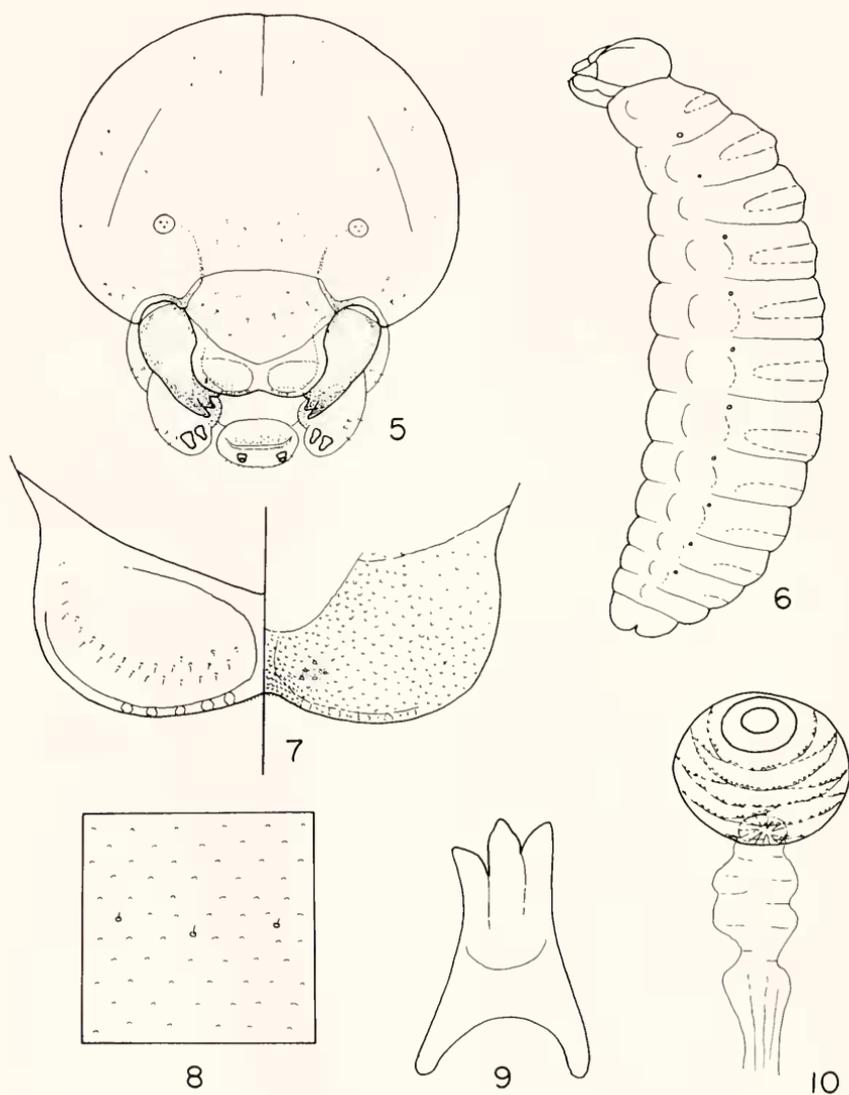
Females were occasionally seen entering or leaving their nests, but none was observed digging, building turrets, or provisioning. In three cases females were in the burrow, facing out, when the nest was excavated. One cell, the only cell at the terminus of the vertical burrow of EC37, contained an egg. The egg was lying flat on the bottom of the empty cell when found; it is possible that had been dislodged from its original position. Cells of three other nests contained larvae partially grown. In two cases there was no prey in the cell, suggesting that provisioning may have been delayed by showers. In one case (MC1) a partly grown larva was accompanied by 16 paralyzed lepidopterous larvae, 2-8 mm long, a mixture of Gelechiidae, Pterophoridae, and Pyraustidae. The largest of the wasp larvae was preserved and is described below.

One cell contained the pupa of a bombyliid fly, which was not successfully reared to adulthood. Other cells were empty or contained fragments of old cocoons, while other termini had apparently not yet been expanded into cells. We obtained the impression that these wasps build and provision very slowly, and the presence of cocoon fragments in some nests suggests that females may reoccupy the nests from which they emerged.

Description of larva: Length 9.5 mm; maximum width 2.9 mm. Body cylindrical, abruptly tapered both anterior and posteriorly; terminal segment somewhat rounded, the anus a transverse slit at about the middle of the segment (Fig. 6). Pleural lobes moderately developed, each body segment except last two crossed by a transverse dorsal elevation. Spiracles about .08 mm in diameter except most anterior pair very slightly larger; external opening small, peritreme well developed; walls of atrium lined with anastomosing ridges which are armed with small asperities; opening into subatrium apparently armed with several teeth (Fig. 10). Integument smooth, although under high power a few minute setae can be observed on the dorsum, as well as sparse, minute granules (Fig. 8).

Head width 1.4 mm, height (exclusive of labrum) 1.3 mm (Fig. 5). Coronal suture short, weak; parietal bands long but unpigmented; clypeofrontal suture nearly straight; head capsule and clypeus with scattered small punctures, a very few of them with minute setae. Antennal orbits circular, .08 mm in diameter, each bearing three minute sensilla in the membrane of the orbit. Clypeus 1.7 x as wide as its median height, apical margin subangulate. Labrum .55 mm wide, bilobed, each lobe bearing a band of about 28 minute setae; apical margin somewhat thickened, bearing several sensory cones; epipharynx densely spinulose medially, elsewhere with sparse, weak spinules, sensory pores five on each side, rather close to the midline (Fig. 7). Mandibles .5 mm long, .32 mm wide at the base; apex with three large, broad teeth; mesal surface somewhat hollowed (Fig. 9). Maxillary palpi about .08 mm long, galeae very slightly shorter; maxillae with a few very small setae laterally, mesal margin produced, minutely spinulose. Spinneret a transverse slit with raised lips, .25 mm long; labial palpi very short; oral surface of prementum weakly spinulose.

Remarks: This larva resembles closely that of *S. canus* Bohart as recently described by Clement (1973), although the shape of the palpi and of the spiracular subatrium is somewhat different. Resemblance to Grandi's (1961) more detailed sketches of *Ancistrocerus gazella* Panzer is also close aside from a major difference in shape of the cranium; features of the mouthparts are virtually identical, indeed the mandibles of all three of these species are much the same.



Figs. 5-10. Mature larva of *Stenodynerus otomitus* Saussure. Fig. 5. Head, anterior view. Fig. 6. Body, lateral view. Fig. 7. Labrum (left) and epipharynx (right). Fig. 8. Portion of dorsum of prothorax, under high magnification. Fig. 9. Mandible, mesal surface. Fig. 10. Anterior thoracic spiracle, under high magnification.

Ancistrocerus clarazianus Saussure

This wasp was common in and near the city of Cafayate, Salta, Argentina, during February, 1972, and we found three nests in flat, hard-packed sandy soil. One was found in an athletic field inside the city limits (EC59), two others in areas of bare soil at Yacochuya, 8 km NW of Cafayate (EC47, MC21). One of these nests was in an early stage of construction, the vertical burrow reaching a depth of only 4 cm. The female was seen carrying small pellets of earth from the nest in flight and dropping them 3-5 cm away, all on one side of the hole, so that there was a scattering of pellets on this side over a band about 4 cm wide, starting about 3 cm from the hole and extending about 5 cm from the hole. Another female was seen flying with small pellets in a similar manner, but dropping them 30-60 cm from the hole. This nest appeared to have a very small, probably incipient turret at the entrance, only 2mm high. This nest was also incomplete, the vertical burrow, 3-4 mm in diameter, ending blindly at a depth of 5 cm.

The third nest (EC59) was being closed by the wasp when we discovered it. The top 1 cm of the burrow was filled solidly with a slightly moist earthen plug. The female was evidently smoothing over the top of the plug when she was captured. The burrow was vertical, 5.5 cm in length, terminating in a single cell which contained an egg that had been laid erect in the bottom center of the cell (Fig. 4). The cell also contained three paralyzed caterpillars, all about 1 cm long, *Loxostege* sp. (Pyralidae). We judge this to have been the final closure of a completed nest; it is possible that the turret had been used up in making the closing plug.

We found a paralyzed male *A. clarazianus* in a nest of *Trachypus petiolatus* in Cafayate (Evans and Matthews, 1973).

ACKNOWLEDGMENTS

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LITERATURE CITED

- Clement, S.L. 1973. Notes on the biology and larval morphology of *Stenodynerus canus canus* (Hymenoptera: Eumenidae). Pan-Pac. Ent., 48: 271-275.
- Evans, H.E. 1956. Notes on the biology of four species of ground-nesting Vespidae (Hymenoptera). Proc. Ent. Soc. Wash., 58: 265-270.
- Evans, H.E., and R.W. Matthews. 1973. Observations on the nesting behavior of *Trachypus petiolatus* (Spinola) in Colombia and Argentina (Hymenoptera: Sphecidae: Philanthini). Jour. Kansas Ent. Soc., 46: 165-175.
- Grandi, G. 1961. Studi di un Entomologo sugli Imenotteri Superiori. Boll. Ist. Ent. Univ. Bologna, 25: 1-659.
- Nielsen, E.T. 1932. Sur les habitudes des Hymenopteres aculeates solitaires, II (Vespidae, Chrysididae, Sapygidae, Mutillidae). Ent. Meddel., 18: 84-174.

A EUROPEAN HARVESTMAN IN NORTH AMERICA (PHALANGIDA, PHALANGIIDAE)¹

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ABSTRACT: The first record of the European harvestman, *Oligolophus tridens* Koch is recorded from North American in northwestern Vermont. A general description of the phalangid is given which will distinguish it from two other common northeastern species, *Odiellus pictus* (Wood) and *Mitopus morio* Fab.

DESCRIPTORS: A European Harvestman in North America (Phalangida, Phalangiidae)

I have long sought to identify a local species of phalangid which is not in the most detailed revision of the group for northeastern U.S. (Bishop, 1949). Dr. Vladimir Silhavy, of Trebic, Czechoslovakia has very kindly determined it as *Oligolophus tridens* Koch. In Bishop (1949) it will trace to the subfamily Oligolophinae, since the basal segment of the chelicera has a spiniform process on the ventral side. It agrees with the common northeastern *Odiellus pictus* (Wood) in having three strong spines on the anterior margin of the carapace but it lacks the femoral spines on the pedipalp which characterize the latter species. The other northeastern Oligolophine, *Mitopus morio* Fab. is a high montane species which lacks both the 3 anterior marginal spines and the femoral spines.

Large immatures of this species are mostly pale dull yellow with small scattered brown spots. They coalesce at maturity to form a vitta with indefinite lateral borders. In the male, the vitta is usually interrupted on the first and second abdominal segments. The male is more narrowed posteriorly than is the female, and the eyes are somewhat larger and more separated.

Both sexes have well developed dorsal spines on the coxae with one on the anterior face of the fourth coxae being especially prominent. The female has prominent mesal lobes on the pedipalpi, but these are lacking in the male.

This is the first record of the species from North America, although unidentified immature *Oligolophus* were reported from Newfoundland by Hackman (1956). *Oligolophus tridens* is found in areas of disturbed soil, such as gardens, pastures, and floodplains. It has been caught at Burlington, Colchester, Isle La Motte, and on the shores of the Winooski River opposite to Bolton. All these localities are in northwestern Vermont. The species seems to be strictly nocturnal, hiding under dense bushes, in tall grass, or under driftwood by day. It is caught frequently in pitfall traps.

REFERENCES

- Bishop, S. C. 1949. The Phalangida (Opiliones) of N.Y. State. Proc. Roch. Acad. Sci. 9(3): 159--235.
Hackman, W. 1956. Phalangida (Opiliones) from Newfoundland. comment. biol. Helsingfors 15: 17.

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NEW GENUS AND SPECIES OF AMPHIPSOCIDAE FROM SOUTHEASTERN ASIA (PSOCOPTERA) ¹

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ABSTRACT: *Calocaecilius* n. gen. is described with *C. decipiens* n. sp. as its type and only known species. The species occurs in Malaysia and the Philippine Islands. The genus is assigned to Amphipsocidae but is not closely related to any known amphipsocid genera. It is similar in superficial appearance to the psocids of the family Calopsocidae. It is suggested that both groups mimic coccinellid beetles.

DESCRIPTORS: Psocoptera; Amphipsocidae; *Calocaecilius* new genus, *Calocaecilius decipiens* new species.

A new genus described below shows in general the characters of Group Caecilietae as stated by Badonnel (1951). It is placed in Amphipsocidae as defined by Badonnel (1955) because of possession of the following characters: (1) robust wings, (2) costa broad and densely setose from base of pterostigma to apical curve in forewing, (3) forewing veins bearing long, strong, upright setae in more than one rank. The new genus is apparently not very closely related to any of the known amphipsocid genera.

Abbreviations used for the measurements in the description are explained as follows: FW.L. = forewing length; T = length of posterior tibia; t_1 = length of posterior basal tarsomere; t_2 = length of posterior distal tarsomere; t_1ct = number of ctenidia on posterior basal tarsomere; IO/D = smallest distance between compound eyes dorsally divided by greatest antero-posterior diameter of compound eye in dorsal view; PO = greatest lateral diameter of compound eye in dorsal view divided by greatest antero-posterior diameter of the eye in dorsal view.

Calocaecilius gen. nov.

Type species: *Calocaecilius decipiens* n.sp.

Vertex slightly extended and flattened behind compound eyes. Antennae slender, about two-thirds length of forewing, bearing sparse semi-upright setae. Lacinial tip (Fig. 3) bicuspid. Forewing (Fig. 1) somewhat coriaceous and elytriform, the surface textured with

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